

**Understanding the Impact of Brand Delistings on  
Assortment Evaluations and  
Store Switching and Complaining Intentions**

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# Understanding the Impact of Brand Delistings on Assortment Evaluations and Store Switching and Complaining Intentions\*

December 21, 2004

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# Understanding the Impact of Brand Delistings on Assortment Evaluations and Store Switching and Complaining Intentions

## Abstract

Recently, retailers have begun considering which brands they can delist without reducing customer satisfaction, losing category sales, or increasing store switching behavior. Although several studies have considered assortment reductions, none has explicitly investigated the impact of total brand delistings. Therefore, the authors study the impact of brand delistings on assortment evaluations and store switching and complaining intentions. They execute both a controlled experiment and a survey and find that brand delisting mainly has negative consequences when the delisted brands have high equity, assortment size is limited, the assortment consists of a low proportion of high-equity brands, and the brand delistings take place in categories with high hedonic levels. The authors discuss the theoretical and managerial implications of these findings.

Since the publication of the Efficient Consumer Response report (Kurt Salmon Associates 1993) the topic of assortment efficiency has received considerable attention from practitioners in the fields of retailing and manufacturing, as well as from marketing academics (Broniarczyk, Hoyer, and McAlister 1998; Food Marketing Institute 1993; Kumar 2004). The traditional perspective asserted that retailers could improve assortment attractiveness and customer retention by extending their assortments (e.g., Borle et al. 2003; Hoch, Bradlow, and Wansink 1999; Oppewal and Koelemeijer 2005). However, recent studies have shown that large assortments do not necessarily lead to greater perceived variety or higher assortment evaluations. For example, Van Herpen and Pieters (2002) find that assortment size may not be a good proxy for perceived assortment variety, and Iyengar and Lepper (2000) similarly show that extensive assortments may undermine consumers' satisfaction. In an assortment reduction-based context, Broniarczyk, Hoyer, and McAlister (1998) show that delisting less preferred items while maintaining constant category space does not harm assortment evaluations.

In contrast with widely held beliefs, some studies have provided examples of assortment reductions that resulted in an increase of category sales (Drèze, Hoch, and Purk 1994; Food Marketing Institute 1993). Boatwright and Nunes (2001) find that small cuts in an assortment may increase category sales, whereas greater cuts engender category sale declines. That retailers carrying limited assortments can be very successful has been proven in practice by discount retailers, such as Aldi, Lidl, and Trader Joe, that have become fierce competitors of service retailers in many markets. Finally, on the basis of thorough analyses of the success of hard discounters in Germany, consulting agency McKinsey claims that limited assortments not only facilitate efficient shopping but also emphasize a low price image (Distrifood, 2004a).

A specific type of assortment reduction is brand delisting. Whereas assortment reductions usually pertain to the delistings of multiple items of different brands, a brand delisting refers the total delisting of a

single brand (no items of that brand are sold anymore) in a category. Brand delisting is a very relevant topic in today's retailing practices for several reasons. First, some retailers (e.g., Wal-Mart, Home Depot, the Gap) are now considered strong brands themselves and have developed successful store brands (Ailawadi and Harlam 2004; Henderson and Mihas 2000; Steenkamp and Dekimpe 1997). These retailers' assortment, in addition to other factors such as their price and service level, represents an important point of differentiation. For example, the Dutch food retailer Edah delisted hundreds of national brands because it wanted to create more shelf space for its profitable, distinctive store brand (Distrifood 2004a). Second, since the mid-1990s, many service retailers have adopted a category management model (Dhar, Hoch, and Kumar 2001) that assigns specific category roles to each product category, which has had various implications for the offered assortment (ECR Europe 1998). For example, a retailer may decide to lower the number of premium brands it offers in a product category because it has changed the category role from a destination to a routine (Dhar, Hoch, and Kumar 2001). Third, retailers can exert buying power over suppliers by threatening to delist brands if buying conditions are not improved (Bloom and Perry 2001) or delist brands to punish a certain supplier. Although some moral issues surround this topic, retail boycotts of individual brands are no longer exceptions. For example, the U.K. retailer ASDA refused to stock the Procter&Gamble brand Charmin (*Marketing Week* 2000), and the German retailers Edeka and Metro delisted some national brands because they were unsatisfied with the pricing and distribution policy of those manufacturers (Distrifood 2004b).

Prior research on assortment reductions mainly has considered the effect of item deletions on category and/or store sales using natural experiments in which a considerable percentage of items in a category was delisted (e.g., Boatwright and Nunes 2001; Borle et al. 2003; Broniarczyk, Hoyer, and McAlister 1998; Drèze, Hoch, and Purk 1994; Food Marketing Institute 1993). In contrast with the focus of current studies on the consequences of item delistings, we investigate brand delistings, which we define as permanent deletions of all items of a brand from the assortment of a retailer. By including "permanent" in

our definition, we imply that store employees are not able to order a particular brand for a longer period of time because the retailer does not list the brand anymore.

The objectives of this research are twofold. First, we want to quantify consumer responses to brand delistings; second, we want to investigate the antecedents that moderate this response. In Study 1, we conduct a controlled experiment in which we vary the assortment size and structure. We then measure the effect of assortment variation on assortment evaluation (AE) and store switching intentions (SSI) in situations in which consumers' primary brand is delisted. In the second study, we conduct a survey in a natural environment by which we measure the effect of a hypothetical brand delisting on SSI and complaining intentions (CI). Because we conducted Study 2 in 16 supermarkets for 10 different product categories, we are able to generalize our results and test several objective brand-, product category-, retailer assortment-, and store-related antecedents for consumer responses to a brand delisting.

The rest of this article is organized as follows: We first review prior literature on assortment reductions. We then continue by presenting the hypotheses, the research methodology, and the empirical results of Study 1. Subsequently, we present Study 2 with its underlying hypotheses, the applied research methodology, and the results of our data analysis. We end with a discussion of the theoretical and managerial implications of our study, as well as its research limitations.

## LITERATURE REVIEW

A broad stream of experimental research addresses assortment size, variety, composition, and evaluation (Hoch, Bradlow, and Wansink 1999; Kahn and Lehmann 1991; Kahn and Wansink 2004; Oppewal and Koelemeijer 2005; Van Herpen and Pieters 2002). These studies, in which respondents are confronted with hypothetical assortments, generally indicate that large assortments with more variety are better. However, some recent studies have pointed to the negative effects of providing extensive choice in assortments (e.g., Iyengar and Lepper 2000). Related to this research stream are studies on the effect of

an assortment reduction, in which consumers are confronted with a delisting of one or more items that previously were part of the assortment known to the consumer. Most assortment reduction studies are based on field experiments and focus on the relationship between item delistings and category sales (Boatwright and Nunes 2001; De Clerck et al. 2001; Drèze, Hoch, and Purk 1994; Food Marketing Institute 1993), though some also study the impact of item delistings on store sales (Borle et al. 2004). Because of the differences in the depth of the assortment cuts studied in natural experiments (i.e., the percentage of items in a category), it is not surprising that different results regarding the cuts' effect on category sales have been found. For example, whereas De Clerck and colleagues (2001) review minor deletions from a wide variety of product categories of a grocery retailer and conclude that category sales were not affected in most categories, Drèze, Hoch, and Purk (1994) conduct a natural experiment and, among other assortment changes, cut the assortment of a few product categories by as much as 10% of the poorly selling items. They report an average category sales increase of 3.9%. The FMI (1993) conducts natural experiments in six categories, examines reductions of varying size (from "limited" to "extended"), and concludes that small cuts can lead to (small) category sales increases, whereas extended cuts may result in small category sales losses. Boatwright and Nunes (2001) consider the effect of major assortment cuts in most categories of an online grocer. In line with previous research, they conclude that eliminating brands and flavors to a small degree helps sales but that deep cuts decrease sales.

Some of the results found in the natural experiments have been confirmed by controlled experiments. Broniarczyk, Hoyer, and McAlister (1998) conduct two controlled experiments to measure the effect of item reductions on assortment perceptions and store choice. They show that retailers may be able to make substantive reductions in the number of items they carry without negatively affecting customers' assortment perceptions and store choice, as long as only low-preference items are eliminated and category space is held constant. However, related research on assortment variety (number of items) and attraction



(e.g., Kahn and Wansink 2004; Van Ketel, van Bruggen, and Smidts 2003) shows that more variety improves assortment perceptions, though this effect diminishes if the actual assortments become larger.

The literature on out-of-stocks is closely related to studies of assortment reductions. An out-of-stock situation differs from an assortment reduction in several aspects but primarily in that an out-of-stock is temporary, whereas an assortment reduction is permanent. In contrast to the assortment reduction literature, most out-of-stock studies show that temporary assortment unavailability leads to significant sales losses (Campo, Gijsbrechts, and Nisol 2000; Emmelhainz, Stock, and Emmelhainz 1991; Sloat, Verhoef, and Franses 2005). This loss seems surprising because the temporary assortment unavailability of a brand seems less severe than the permanent assortment unavailability of a brand. However, when Campo, Gijsbrechts, and Nisol (2004) investigate the differences between consumer reactions to out-of-stocks and permanent assortment delistings more systematically, they conclude that the effect of a permanent assortment reduction in terms of sales losses is, as expected, greater than the effect of temporary assortment reductions.

On the basis of the preceding literature review, we can derive several conclusions. First, prior literature on assortment reductions has not considered brand delistings as a distinct type of assortment reduction. Instead, previous studies focus on measuring the effect of a specific number of item deletions on, for example, assortment perception or category sales. Because item deletions still allow the possibility of switching to other items of the same brand, the effect of brand delistings, in which case no switching alternatives for the same brand are available, might be different. The only exception to this trend is Boatwright and Nunes (2001), who show that if an item delisting implies a brand delisting, the effect on category sales is more negative than if not all the items of a brand are delisted. Although this finding emphasizes the possible negative effect of brand delistings, their study does not provide an in-depth investigation of the effect of brand delistings. Because brands differ in terms of brand equity, as a result of

advertising and R&D investments, we question whether consumers react differently to a delisting of a high-equity brand than they do to a delisting of a low-equity brand.

Second, previous literature provides some contrasting results. Several natural experiments have shown that assortment reduction can lead to a growth in category sales (e.g., Boatwright and Nunes 2001; Drèze, Hoch, and Purk 1994). These findings contrast with findings from the out-of-stock literature, which demonstrate that most out-of-stock situations lead to category sales losses. Third, most studies in the assortment reduction literature stream are descriptive in nature and do not test models that include several antecedents to explain the effect of a brand delisting. This limitation causes a gap in retailers' understanding of the factors that affect brand delisting responses.

In the following sections, we present two studies on the effect of brand delistings in our attempt to fill the preceding research gaps. Study 1 involves a controlled experiment in which consumers' primary brand is delisted. Study 2 employs an in-store survey in which consumers are confronted with the hypothetical delisting of a brand they have just purchased.

## STUDY 1

In Study 1, we specifically focus on measuring the effect of brand equity, assortment size, and assortment structure on AE and SSI if the consumers' primary brand, whether high or low equity, is delisted. In a controlled experiment, we test whether consumers' reactions to this brand delisting depend on assortment size (number of brands within the category) or assortment structure (proportion of high-equity brands) presented to the respondent after the brand was delisted. The inclusion of the dependent variable AE is based on prior research on the effect of item de-listings and category space on assortment perceptions (Broniarczyk, Hoyer, and McAlister 1998). Our inclusion of the dependent variable "SSI with regard to purchase in the product category" is based on the notion that delistings may affect category and

store sales if customers no longer or less frequently buy products in the store in which the delisting occurred (Boatwright and Nunes 2001; Campo, Gijsbrechts, and Nisol 2003; Drèze, Hoch, and Purk 1994).

## Hypotheses

### *Brand Equity of Delisted Brand*

Chandon, Wansink, and Laurent (2000) distinguish between high- and low-equity brands. A brand has high customer-based brand equity if consumers react more favorably to a product when the brand is identified than when it is not (Keller 2002), whereas a brand with low equity does not provide many benefits and is purchased mainly because of its low price (Chandon, Wansink, and Laurent 2000). High-equity brands enjoy higher perceived quality, brand preference, and brand awareness than do low-equity brands (Aaker 1991; Keller 2002), which enables retailers to charge a price premium for them (Ailawadi, Lehmann, and Neslin 2003). Consumers of high-equity brands tend to be more committed to their brand (Aaker 1991), which makes a negative reaction to a brand delisting more likely. Retailers offer both low- and high-equity brands within their product category assortment so that they can fulfill the heterogeneous needs of their customers (Hoch, Bradlow, and Wansink 1999). In an assortment reduction context, Broniarczyk, Hoyer, and McAlister (1998) show that delisting less preferred items has a smaller impact on assortment perceptions than does delisting more preferred items. Sloot, Verhoef, and Franses (2005) show that, in the context of an out-of-stock situation, the brand equity of the unavailable item negatively affects store loyalty. Therefore, we propose that the brand equity of the delisted brand will affect both AE and SSI.

*H<sub>1</sub>: When a high-equity brand is delisted, (a) AE will be lower and (b) SSI will be higher than when a low-equity brand is delisted.*

### *Assortment Size*

When the consumers' primary brand is delisted, the assortment size in terms of the number of remaining brands in the category may reduce the effects of the delisting on AE and SSI. First, a larger

assortment provides consumers with more switching alternatives (Campo, Gijsbrechts, and Nisol 2000), which may lead to higher AE and lower SSI. Second, because of their need for variety seeking, many consumers will use several brands to fulfill their category requirements (Van Trijp, Hoyer, and Inman 1996), so a larger assortment may lead to higher AEs. Moreover, Broniarzyck, Hoyer, and McAllister (1998) show that larger assortments have a higher AE when the preferred item is delisted.

*H<sub>2</sub>: When consumers' primary brand is delisted from a large assortment, (a) AE will be higher and (b) SSI will be lower than it would be for small assortments.*

#### *Assortment Structure*

In line with H<sub>1</sub> regarding the effect of the brand equity of the delisted brand, we define the assortment structure as the proportion of high-equity brands (versus low-equity brands) in the category. Assortment structure may influence both AE and SSI. First, because consumers are more committed to high-equity brands than to low-equity brands, they probably will value assortments with a high proportion of high-equity brands over assortments with a low proportion of high-equity brands (Kahn and Lehmann 1991). Second, in a delisting situation, consumers are forced to make new purchase decisions and search for alternatives within the assortment because they cannot buy their preferred brand. During this search and evaluation process, consumers will try to reduce their risks (Campo, Gijsbrechts, and Nisol 2000). High-equity brands are particular suited to reduce risks because they are well known and have a higher perceived quality (Aaker 1996) and therefore are usually more acceptable alternatives than are low-equity brands. That is, assortments with a high proportion of high-equity brands provide more acceptable alternatives than do assortments with a low proportion of high-equity brands.

*H<sub>3</sub>: When customers' primary brand is delisted and the assortment offers a high proportion of high-equity brands, (a) AE will be higher and (b) SSI will be lower than when the assortment offers a low proportion of high-equity brands.*

*Interaction Effect: Brand Equity  $\times$  Assortment Structure*

If consumers are confronted with a delisting of their primary brand, they are forced into a new decision-making process, during which they might search for brands they consider acceptable alternatives. A consumer who regularly buys low-priced (low-equity) brands will search for alternatives in the same equity range to achieve the same value. This phenomenon is, to some extent, comparable to the tendency of consumers to purchase the same type of brands (e.g., private labels) in different categories (Batra and Sinha 2000; Richardson, Jain and Dick 1996). Thus, when a high- (low-) equity brand is delisted and there are relatively few high- (low-) equity brands in the remaining assortment, there will be fewer acceptable alternatives than when there are relatively more high- (low-) equity brands.

*H<sub>4</sub>: When consumers' primary brand is delisted and the equity of the delisted brand is congruent with the equity structure of the assortment, (a) AE will be higher and (b) SSI will be lower than when they are not congruent.*

*Interaction Effect: Assortment Size  $\times$  Assortment Structure*

Kahn and Lehmann (1991) show that consumers' assortment preference is positively affected by a combination of assortment size and assortment variety. This finding may be relevant for the interaction effect between assortment size and assortment structure because an assortment with a high proportion of high-equity brands may be perceived to offer more variety than an assortment with a low proportion of high-equity brands. From a consumer's perspective, a "complete" assortment may be one that carries most of the available brands (assortment size) and in which all the well-known (high-equity) brands are available. In this respect, we expect that an extensive assortment that is missing several high-equity brands will be considered incomplete by consumers compared with an extensive assortment that carries all high-equity brands but excludes a few low-equity brands.

*H<sub>5</sub>: When consumers' primary brand is delisted, assortment size's positive effect on (a) AE and negative effect on (b) SSI will be greater for those assortments with a high proportion of high-equity brands than for those with a low proportion of high-equity brands.*

## **Experimental Design**

### *Procedure and Measurement*

We test our hypotheses in a controlled experiment with 395 respondents, who were participants in an online panel of buyers of regular beer in the Netherlands. An international beer brewer with several leading brands in the Netherlands provided access to this panel. On the basis of information about their past beer buying behavior, respondents were confronted with an assortment that excluded the brand they previously bought most often (primary brand). The shown assortment varied in size (6 or 9 brands)<sup>1</sup> and structure (one-third high-equity brands or two-thirds high-equity brands). Each respondent was randomly assigned to one of the four experimental conditions. Within each condition, the brands presented to the consumer were randomly selected from a list of seven high- and seven low-equity brands, which together represented more than 90% of the total sales in the regular beer category.

We assigned the brands to the two brand equity categories as follows: In a survey, 40 food industry managers rated the brand equity level of the 14 selected beer brands by noting on a seven-point scale the perceived quality (high versus low), perceived price level (high versus low), and perceived consumer preference (high versus low) for each brand (Chandon, Wansink, and Laurent 1998). The Cronbach's alphas, calculated across participants for each brand, averaged .88. We averaged the scores across the three items and used a median split to assign seven brands each to the two groups.

After viewing an online presentation of the assortment (see Figure 1), respondents filled in a questionnaire that assessed their AE and SSI. For their AE, we used a three-item (negative–positive,

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<sup>1</sup> Store checks revealed that most service supermarkets carry assortments that vary between 6 and 9 beer brands; most of these brands can be considered high-equity brands.

unattractive–attractive, and not inviting–inviting), bipolar, seven-point scale (Ketel, van Bruggen, and Smidts 2003). The coefficient alpha for the scale is .90. Because SSI is relatively straightforward, we used a single-item, five-point scale (Rossiter 2002) on which respondents indicated the probability that they would switch to another store for future purchases of regular beer (1 = will definitely keep on buying regular beer in this store, 5 = will definitely go to other stores to buy regular beer).

-- Insert figure 1 about here --

### *Sample*

The sampling frame consisted of more than 18,000 regular beer buyers participating in an online beer panel. Only subjects who were primary buyers of one of the fourteen selected regular beer brands could be part of the sample. To include a substantial number of low-equity buyers, we used a stratified sampling procedure to select the subjects. For each brand, we set a target response of 25 respondents, but because the total number of primary buyers for low-equity brands was relatively low within the beer panel, we could not achieve this target for some of these brands. Assuming a response rate of approximately 50%, 705 regular beer buyers were invited to participate in the online survey, and 395 (56%) responded. Of the respondents, 42% were classified as low-equity buyers and 58% as high-equity buyers.

### **Experimental Results**

We provide the average AE and SSI scores in Table 1. To test the significance of the three independent variables and the two interaction variables, we use an ANOVA (394 degrees of freedom [d.f.] and 5 d.f., respectively). We display the ANOVA results in Table 2.

-- Insert Table 1 and Table 2 about here --

### *Main Effects*

The first hypothesis predicts that AE will be lower ( $H_{1a}$ ) and SSI will be higher ( $H_{1b}$ ) when a high-equity brand is delisted than when a low-equity brand is delisted. In support of these hypotheses, the AE is lower (3.86 versus 4.38;  $F = 15.1$ ,  $p < .01$ ) and SSI is higher (3.55 versus 2.9;  $F = 20.1$ ,  $p < .01$ ) for high-equity brand delistings than for low-equity brand delistings. We also find support for the proposition that AE will be higher ( $H_{2a}$ ) and SSI lower ( $H_{2b}$ ) when a brand delisting occurs in a large instead of a small assortment; AE is higher for larger assortments (3.92 versus 4.24;  $F = 5.8$ ,  $p < .01$ ), and SSI is higher for smaller assortments (3.41 versus 3.18;  $F = 3.0$ ,  $p < .01$ ). Finally,  $H_{3a}$  and  $H_{3b}$  predict that, when the percentage of high-equity brands is higher, AE will be higher and SSI will be lower. Our results show that consumers evaluate assortments that consist of two-thirds high-equity brands higher than they do assortments with one-third high-equity brands (4.30 versus 3.84;  $F = 10.8$ ,  $p < .01$ ), and their intention to switch stores is lower when the assortment consists of two-thirds high-equity brands (3.14 versus 3.46;  $F = 4.7$ ,  $p < .05$ ), in support of  $H_{3a}$  and  $H_{3b}$ .

### *Interaction Effects*

Although  $H_{4a}$ , which proposes an interaction effect between the brand equity of the delisted brand and the assortment structure on AE, is not supported ( $F = 1.3$ ,  $p > .10$ ), we find weak support for  $H_{4b}$  ( $F = 2.1$ ;  $p < .10$ ), which predicts the effect for SSI (Fig. 2). As we show in Figure 2, the assortment structure might reduce the absolute effect of brand equity on SSI. We also find support for the hypothesized interaction effects between assortment structure and assortment size ( $H_{5a}$ :  $F = 2.6$ ,  $p < .10$ ;  $H_{5b}$ :  $F = 4.2$ ,  $p < .05$ ), as we show in Figure 3. Thus, the effect of assortment size in assortments with a high percentage of high-equity brands is smaller than in assortments with a low percentage of high-equity brands.

-- Insert Figure 2 and 3 about here --



### *Mediating Effect of Assortment Evaluations*

Broniarczyk, Hoyer, and McAllister (1998) show that assortment perceptions may mediate the effect of assortment characteristics on store choice. We therefore estimated an ANOVA for SSI in which we include AE as a covariate (see Table 2). In line with Broniarczyk, Hoyer, and McAllister (1998), we find that AE relates strongly to SSI ( $F = 139.9, p < .01$ ) and acts as a mediating variable for the effect of assortment size on SSI. It also mediates the effect of assortment structure. However, the effect of brand equity remains significant in this model ( $F = 8.4, p < .01$ ). Thus, brand equity has a direct effect on SSI when we control for the effect of AE.

## STUDY 2

In Study 2, we develop and test a conceptual model by which we attempt to understand the determinants of SSI and CI after a delisting. We use in-store surveys of 1213 consumers, collected in 16 supermarkets of four retail chains, that pertained to purchases in 10 preselected product categories. Unlike in Study 1, we focus solely on behavioral intentions here. Moreover, whereas the SSI variable in Study 1 basically measured SSIs at the category level (buy brand in another store), here we study the impact of delistings on switching intentions at the store level (fewer visits to the store in which the hypothetical brand delisting occurs). This type of SSI results in sales losses that extend beyond category sales losses in the product category in which the delisting occurs. In addition, we include CI as a consequence of brand delistings because, theoretically, complaining is an important consumer response if consumers are dissatisfied with the product or service (Singh 1990). Moreover, in-depth interviews with four retail managers revealed that retailers carefully compile complaints after a delisting operation and use them to consider whether to relist the brand in the assortment.

In this second study, we include the same independent variables (brand equity, assortment size, and assortment structure) as in Study 1, but we also test hypothesized interaction effects. The breadth of

this study (16 supermarkets of four different retail chains, 10 different product categories) provides generalizability for the findings of Study 1. We also include other antecedents of SSI and CI, which can be classified as: (1) brand-related, (2) product category-related, (3) retail assortment-related, and (4) store-related antecedents. By including only objective variables (i.e., no individual perceptions, such as brand preference, brand, loyalty, or store preference), we distinguish this model, prevent common method bias, and provide a model that can be used easily by retailers to estimate the effects of several proposed brand delistings.

## Hypotheses

### *Brand-Related Antecedents*

The first group of variables relates to the specific brand for which the brand delisting occurs. In line with Study 1, we consider the brand equity of the delisted brand an explanatory variable for SSI ( $H_1$ ). We expect that the brand equity level of the delisted brand will relate positively to CI because we assume that consumers are more committed to high-equity than to low-equity brands. A second brand characteristic is the type of delisted brand, for which we distinguish between store and manufacturer brands (Dhar and Hoch 1997). In contrast with manufacturer brands, store brands are distributed only in a particular retail chain, which means that if a store brand is delisted, consumers cannot switch to a competing store to obtain the same store brand. Several researchers also have suggested that store brands are associated with higher store loyalty (Corstjens and Lal 2000; Steenkamp and Dekimpe 1997), though other researchers argue that heavy users of store brands are loyal to store brands in general, not necessarily to the store brand of a particular retailer (Ailawadi and Harlam 2004). Because consensus does not exist for this point, we do not formulate a hypothesis about the relationship between type of brand and SSI and CI.

*H<sub>6</sub>: The brand equity level of the delisted brand will be positively related to (a) SSI and (b) CI.*

### *Product Category-Related Antecedents*

The first product category variable is the type of product: utilitarian or hedonic (Batra and Ahtola 1991). Hedonic products, such as ice cream and salty snacks, provide more experiential consumption (i.e., fun, pleasure, excitement), whereas utilitarian product, such as detergents and toilet paper, provide primarily instrumental and functional benefits (Dhar and Wertenbroch 2000; Hirschman and Holbrook 1982). The different nature of utilitarian and hedonic products may affect the buying process, in that the buying process of utilitarian products may be driven mainly by rational buying motives, whereas that of hedonic products includes emotional motives as well. Because of these emotional buying motives, consumers may be more committed to brands in hedonic product categories than to those in utilitarian product categories. Therefore, we expect that consumers will demonstrate higher SSIs and CIs if a brand delisting occurs in a hedonic rather than a utilitarian product category.

The second considered product category–related variable is the concentration level of brands in the product category. A highly concentrated product group is characterized by few dominant brands with high market shares, which may reflect significant perceived differences between these dominant brands and others. We measure brand concentration level as the squared market shares of each brand to encompass the combined market power of the available brands (Ailawadi and Harlam 2004). Therefore, we expect that a high concentration level will relate positively to SSIs and CIs, because if consumers do not consider other brands good alternatives, they will either visit another store or complain.

The third product-related variable we study is the number of brands in the product category. If this number is greater, it should be easier for consumers to find an acceptable alternative in the case of a brand delisting. However, a higher number of brands in a category also may signal a segmented market in terms of consumer preferences (Narasimhan, Neslin, and Sen 1996) because retailers offer many brands when they assume large variety in consumer needs for a category (Hoch, Bradlow, and Wansink 1999). In this case, because each brand satisfies a specific need, there are no suitable alternatives in the assortment. In

summary, because we find opposing arguments for the effect of the number of brands on SSI and CI, we do not put forward a directional hypothesis for this effect.

*H<sub>7</sub>: The type of product will be positively related to (a) SSI and (b) CI.*

*H<sub>8</sub>: The concentration level of brands in the product category will be positively related to (a) SSI and (b) CI.*

#### *Retail Assortment–Related Antecedents*

The third group of antecedents we distinguish relates to the product category assortment offered by the retailer. As in Study 1, we consider assortment size, but in Study 2, we measure it as the number of brands offered by the retailer in a certain category compared with the number of brands offered in the same category by other participating retailers. In line with Study 1, we hypothesize that assortment size negatively relates to SSI, and we also expect that it is negatively related to CI. When faced with a smaller assortment, which makes it more difficult to find a suitable alternative, consumers are more likely to complain.

We also consider assortment structure. In line with Study 1, we expect that assortments with a high proportion of high-equity brands will have lower SSI; we use similar reasoning to hypothesize that consumers will be less likely to complain.

*H<sub>9</sub>: The assortment size will be negatively related to (a) SSI and (b) CI.*

*H<sub>10</sub>: The assortment structure will be negatively related to (a) SSI and (b) CI.*

#### *Store-Related Antecedents*

Finally, the fourth group of antecedents pertains to the type of retail situation in which the brand delisting occurs. The first variable we study is store type, which we distinguish between price- and service-oriented stores (Shankar and Bolton 2004). Service-oriented stores generally carry a wider and deeper assortment, offer better facilities (e.g., parking lot, shopping assistance), and have a higher price level than price-oriented stores. We expect that SSIs are lower if the brand delisting occurs in a service-oriented

store, because consumers will have more alternatives from which to choose. However, the expected effect of store type on CI is not in line with its effect on SSI. Because expectations are based on prior experiences with the store (Boulding et al. 1993), customers of service-oriented stores may have higher expectations about assortment availability than customers of price-oriented stores. Therefore, a brand delisting should create more dissatisfaction for shoppers at service-oriented stores than for shoppers at price-oriented stores, which may lead to a higher level of complaining by shoppers of service-oriented stores.

The second store-related variable is the number of alternative stores. Theoretically, the costs of switching to another store are lower if the number of alternative stores in the environment is higher (Campo, Gijsbrechts, and Nisol 2000), so the number of alternative stores should be positively related to SSI. However, the effect of the number of alternative stores on CI is less clear. Consumers may be more demanding when there are many stores, but this scenario also may provide consumers with more alternatives, which may lead them to consider complaining a waste of time. Therefore, we do not hypothesize about the relation between the number of alternative stores and CI.

*H<sub>11</sub>: Store type will be (a) negatively related to SSI and (b) positively related to CI.*

*H<sub>12</sub>: The number of alternative stores will be (a) positively related to SSI.*

#### *Control Variables*

As control variables, we include age and gender in our model. We also include “promotional buy” to measure whether the hypothetically delisted brand was on a promotion. Consumers may not be as brand loyal to a brand purchased on promotion as they are to a brand purchased without a promotion. Therefore, we expect that promotional buy is negatively related to SSI and CI and should be included as a control variable.

## Research Methodology

### *Data Collection*

Data about consumer brand delisting responses were collected using a survey. In line with out-of-stock research, we use a hypothetical brand delisting (Campo, Gijsbrechts, and Nisol 2000) so that we can study brand delisting behavior for various brands in different categories, and in different stores. Although brands might be delisted in a natural experiment as well, a natural experiment would limit the scale of the research to a small number of stores, product categories, and brands, which undermines our ability to develop and test a conceptual model with, for example, product category– and store-related antecedents.

Data were collected by four experienced interviewers employed by a research agency through personal interviews with respondents who had just visited a supermarket. The interviews took place in 16 different supermarkets that belong to four retail chains (four stores per chain). Through visual inspection of the consumers' shopping baskets at the checkout lanes, the interviewers preselected consumers who purchased the product groups of interest. After they left the checkout area, the preselected consumers were asked to participate in a study about their shopping behavior. Approximately 60% of the preselected consumers agreed to participate. A basket analysis was conducted to highlight the brand of interest, and questions pertaining to brand delisting responses were asked with reference to that purchased brand. The advantage of interviewing shoppers shortly after their shopping trip is that consumers can recall more easily their real decision-making situation. We believe this data collection procedure enhances the realism of the brand delisting situation and therefore the validity of the responses.

Interviews took place throughout the week and the individual days to ensure a regular pattern of shoppers. In total, 1213 respondents participated in the study. Actual responses per product category varied between 93 (rice) and 151 (cola) (see Table 3).

-- Insert Table 3 about here --

### *Dependent Variables*

As we mentioned previously, with this study we hope to measure the effect of a hypothetical brand delisting on SSI and CI. Although consumers' intentions about future behavior in this context cannot be translated perfectly to actual future behavior, research shows that intentions are related to actual behavior (Morwitz, Steckel, and Gupta 1997). Therefore, to measure the dependent variables, we used the following procedure: After selecting the brand of interest from among the 10 specified product groups, the interviewer asked the consumer what he or she probably would do in the future if the store decided to delist the brand. Consumers rated their SSI on a five-point scale, in which they could indicate their probability of visiting the store (1) as frequently as before, (2) somewhat less often, (3) less often, (4) much less often, or (5) stop buying at the store at all. In case of a brand delisting, 2.8% of the consumers said they would probably stop buying at the store at all, whereas 88.7% indicated that they would visit the store as frequently as before. To measure CI, we used a three-item formative scale (Fornell 1987) developed on the basis of Singh's (1990) work. Consumers were asked to indicate the probability they would engage in each of the following complaining actions: (1) ask a store employee about the delisting, (2) send a complaint to consumer services, and (3) tell about the brand delisting to third parties (e.g., friends, family). These three items may be considered a set of distinct facets of the CI construct. For example, a disappointed consumer may ask the stores' employee about the delisting but not send a complaining letter to the organization. Indeed, interitem correlations among the three complaining items are rather low ( $r$  between .2 and .3). In this situation, we therefore define the latent variable CI using a linear sum of the three complaining items (Bagozzi 1994).

### *Independent Variables*

To prevent common method bias (Baumgartner and Steenkamp 2001; Bickart 1993), we measured the independent variables separately from the dependent variables. Therefore, we limited the measures used for objective or intersubjective measures, with the exceptions of the control variables promotional buy,

age, and gender, which we could measure in a straightforward way. We provide all the measures in the Appendix.

Brand-related antecedents. In designating each of the hypothetically delisted brands as either a manufacturer or a store brand, we used the evaluations of 40 food industry managers for three brand equity dimensions: (1) perceived quality, (2) perceived price level, and (3) perceived consumer preference (Chandon, Wansink, and Laurent 2000). The managers used a seven-point Likert scale to rate each brand on each of the three brand equity indicators (1 = low, 7 = high). The average alpha score among the 111 brands was .78, with a standard deviation of .086; therefore, we summated the scores for the three items and calculated the average brand equity score for each brand, which we then employed in our database.

Product-related antecedents. We assessed the hedonic level of the product category with the same group of 40 food industry managers, who scored each product category on the following items: (1) attractive, (2) nice, and (3) enjoyment (1 = low, 7 = high) (Batra and Ahtola 1991). The average coefficient alpha across the 10 product categories was .79 (see Table 3). We summated the three items, calculated the average score for each category, and included it in our database as the hedonic-level score for each category. We operationalized the concentration level of a product category as a Herfindahl-Hirschman index. For each product group, we summated the squared market shares of each of the top four brands (Ailawadi and Harlam 2004; Schmalensee 1977). A number closer to 1 indicates a high concentration level, whereas a score closer to 0 indicates a low concentration level. We measured the number of brands antecedent as the number of brands available from each retailer, garnered from store checks, in the product category.

Retail-assortment related antecedents. We calculated assortment size as an index that reveals the relative choice level for a particular product group from retailer X compared with the choice level for that product group offered by other participating retailers. For example, if retailer X offers 9 brands of beer and the average number of beer brands offered by all participating retailers is 12, the index for retailer X in the



beer category is .75. To assess the choice level of each store, we counted the number of brands offered by each considered store. For assortment structure, we measured the percentage of high-equity brands in the product category by the retailer. For example, if retailer A offers 9 brands of beer, 6 of which are classified as high-equity brands (based on a median split of the brand equity scores in the category), the assortment consists of .67% high equity brands and .33% low equity brands.

Store-related antecedents. For the variable store type, we distinguish between service- and price-oriented stores on the basis of supermarket classifications by the market research agency GfK (2004) of each of the 16 participating supermarkets. A store is classified as service oriented when its prices are relatively high and its assortment level is extended, whereas a store is classified as price oriented when its prices are rather low and its assortment is limited. Theoretically, an everyday low price store can combine low prices and a high service level, but Study 2 includes only hi-lo retailers (Kahn and McAlister 1997). We measured the number of alternatives stores as the number of stores in the same zip code area of the store at which the hypothetical delisting was investigated.

### *Analysis*

In this study, we are interested in the effects of brand-, product category-, retail assortment-, and store-related variables on SSI and CI. The general model that holds for both delisting responses is formulated as follows (see the Appendix for abbreviations):

$$\begin{aligned} \text{Delisting response}_{i,b,p,r,s} = & \alpha_0 + \alpha_1 BE_{i,b} + \alpha_2 BT_{i,b} + \alpha_3 PT_{i,p} + \alpha_4 CL_{i,p} + \alpha_5 NB_{i,p} + \alpha_6 AS_{i,p,r} + \alpha_7 STR_{i,p,r} \\ & + \alpha_8 ST_{i,s} + \alpha_9 NAS_{i,s} + \alpha_{10} PB_i + \alpha_{11} Sex_i + \alpha_{12} Age_i + \beta SD_i + \epsilon_i. \end{aligned} \quad (1)$$

Note that we model the response of consumer  $i$  for both independent variables, which means that we include variables for four different aggregation levels: brand level  $b$ , product category level  $p$ , retail assortment level  $r$ , and store level  $s$ . In this model we also account for possible store specific effects with

the inclusion of a vector of dummies for each store (SD). We also test for interaction effects between assortment structure and brand equity and between assortment structure and (relative) assortment size. To do so, we estimate an additional model in which we add the following interaction terms to Equation 1:  $STR_{i,p,r} \times BE_{i,b}$  and  $STR_{i,p,r} \times AS_{i,p,r}$ .

We measure SSI on a single five-point scale. Because this scale should be considered an ordinal scale, we use an ordered probit model instead of the standard linear regression model to estimate Equation 1 (Long 1997). In an ordered probit model, the observed response variable is modeled on an underlying continuous variable  $y_i^*$ , which depends linearly on explanatory variables. We estimate the model with maximum likelihood in E-Views 4.0. To estimate the effect of our explanatory variables on assortment satisfaction and complaining behavior, we use a standard linear regression model with ordinary least squares, because the summation of the three CIs can be considered an interval scale.

Prior to estimating the model for Equation 1, we assess whether multicollinearity might cause severe problems in our data by considering the correlation among the independent variables (see Table 4). In general, the correlation between the independent variables is low. We also compute the variance inflation factors and find that all are less than 2. Therefore, we conclude that multicollinearity will not affect our estimation results (Hair et al. 1998; Leeflang et al. 2000). We use White's (1980) method to correct for potential heteroscedasticity in the errors and variables.

-- Insert Table 4 about here --

## Empirical Results

### *Descriptive Statistics*

We used median splits to classify the antecedents into low-equity versus high-equity brands and then calculated the average SSI and CI for each group. We also used median splits to distinguish between store-loyal and store-switching consumers and complainers and noncomplainers. In Table 5, we report the

average SSI and CI and the percentages of store switchers and complainers for each antecedent. We find substantial significant differences that underline the importance of several of the antecedents in our conceptual model (Table 5). For example, if a high-equity brand is delisted, 17% of its buyers indicate that they will visit the store less frequently. For a low-equity brand, this percentage is only 8%. If a brand delisting occurs in a product group with a high hedonic level, 20% of its buyers indicate that they would be less loyal to the store, whereas the percentage of store switchers for brand delistings in low hedonic product categories is only 7%.

-- Insert Table 5 about here --

### *Store Switching Intentions*

We present the estimation results of Equation 1 in Table 6. The model for SSI is significant and explains 20% of the variance, according to the  $R^2$  of McKelvey and Zavoina (1975). We find that five of the seven hypothesized effects are significant (four at  $p < .05$ , one at  $p < .10$ ). In particular, we find a positive effect of brand equity, product type (hedonic level), and concentration level on SSI. We find negative significant coefficients for assortment size ( $p = .08$ ) and assortment structure. Furthermore, the analyses show that the number of brands in the category is positively related to SSI, which confirms the findings of Narasimhan, Neslin, and Sen (1996) that categories with many brands reflect heterogeneity in the market, which leads to fewer good alternatives for delisted brands. Together, these results support  $H_{6a}$ ,  $H_{7a}$ ,  $H_{8a}$ ,  $H_{9a}$ , and  $H_{10a}$ . However, we do not find support for both store-related hypotheses  $H_{11a}$  or  $H_{12}$ . Our results also confirm the results of Study 1, in which we found significant effects for brand equity, assortment size, and assortment structure. We also tested for interaction effects between assortment structure and brand equity and between assortment size and assortment structure, but our results reveal no significant interaction effects ( $p = .44$ ;  $p = .12$ ), so our findings from Study 1 with regard to these interaction effects are not replicated in Study 2.

-- Insert Table 6 about here --

### *Complaining Intentions*

Our model explaining CIs is significant and explains 10,7% of the variance. Specifically, we find five of the six hypothesized effects are significant (four at  $p < .01$ , one at  $p < .10$ ). Similar to our findings for SSI, we find a positive effect of brand equity, product type, and concentration level. Furthermore, we find that store type is positively related to CI. Thus, customers of service-oriented supermarkets are more inclined to complain in response to a brand delisting. Also, the number of alternative stores is positively related to CI. This supports the idea that consumers who have more stores in the vicinity tend to be more critical about the assortment that should be available. We also find a positive significant effect of the number of brands, which confirms again that the number of brands reflects heterogeneity in the category. We find a positive effect for age that implies that older consumers are more inclined to complain than are younger consumers. Also similar to our explanation of SSI, we find a negative significant effect for assortment structure ( $p = .08$ ). Our results thus support  $H_{6b}$ ,  $H_{7b}$ ,  $H_{8b}$ ,  $H_{10b}$ , and  $H_{11b}$  but not  $H_{9b}$ . Finally, we estimated the interaction effects between assortment structure and brand equity and between assortment structure and assortment size and find marginal support for the interaction effects indicated in Study 1 ( $\beta = -0.31$ ,  $p = .07$ ;  $\beta = -3.28$ ,  $p = .09$ ). Note, however, that the dependent variable CI differs from the AE and SSI variables measured in Study 1.

## DISCUSSION

With this research, we study the impact of brand delisting on AE, SSI, and CI. We thereby contribute to the literature on the effects of assortment reductions in several ways. First, our research setting differs from other studies of assortment reduction because its starting point is the delisting of the

consumers' preferred brand. Previous natural and controlled experiments have focused on measuring the effect of multiple item delistings within or across categories. Our focus on brand delisting also adds to the understanding of the effect of brand-specific characteristics, such as brand equity, on consumer responses to a brand delisting.

Second, our focus on single brand delistings instead of assortment reduction is in line with recent retail management developments. In the 1990s, many retailers aimed to increase their operating profits by creating efficient assortments (Food Marketing Institute 1993). On many occasions, retailers reduced their assortments by 10%–15% by removing low-selling stockkeeping units (ECR Europe 1998). In today's retailing environment, brand delistings continue to be common. Due to the growth of private labels, retailers believe they are less dependent on individual national brands (Serdar, Hoch, and Raju 2002; Steenkamp and Dekimpe 1997). In addition, retailers have begun to consider their distinctive assortments in their decisions about which brands to list, which means that fewer retailers are interested in selling all well-known brands. Finally, to improve buying conditions, retailers threaten manufacturers with brand delisting.

Third, various studies on assortment reductions seem to suggest that assortment reductions may not harm or even be beneficial for retailers. Our study reveals that the majority of brand delistings will lead to lower AEs and at least some disappointed customers. In most brand delisting situations, at least a small percentage of consumers indicate that they would be less loyal to a store that delisted their preferred brand, which implies a potential sales loss beyond the product category in which the delisting occurs. Prior findings might not include this effect because these negative consequences may be weaker for pure item deletions or may not be statistically significant at an aggregate level. However, an overall store sales loss of a "statistically marginal" 1% of consumers due to a brand delisting is very significant for the retailers' operating profit.

Fourth, prior studies of assortment reductions have not developed a conceptual model that attempts to explain brand delisting consequences on the consumer level. Usually, such studies are

descriptive in nature (Drèze, Hoch, and Purk 1993; Food Marketing Institute 1993) or consider only a limited number of explanatory variables, such as assortment size or item preference. Also, prior studies have been based on a limited number of categories and/or stores. In this study, we include several new variables, such as brand equity, assortment structure, product type, and store type. Furthermore, we test the effect of these antecedents on brand delisting responses in 16 different stores and 10 product groups, which enables use to generalize our findings across stores and product categories. We suggest that the variance in the brand delisting responses across stores, product categories, and brands may explain the mixed results in natural experiments on assortment reduction.

We consider the following findings the most important of our research: First, delisting high-equity brands has stronger negative effects than does delisting low-equity brands. The effects of high-equity brand delistings are, however, less negative if retailers provide sufficient alternative high-equity brands in their remaining assortments. However, brand loyalty toward even so-called “small brands” may be very high for individual consumers, such as was the case for “fanatic” Double-Cola buyers (Wolburg 2003). Second, brand delistings have stronger negative consequences when they are executed in product categories with a high hedonic level, such as beer, cola, or cigarettes. Third, in line with prior assortment reduction literature, retailers who provide a large category assortment are less affected by brand delistings. However, this finding does not imply that delisting brands in categories that contain a high number of brands will be less harmful; rather, we find that in categories that carry many brands (e.g., beer), brand delistings have greater negative consequences than they do in categories with only a few brands. A possible explanation for this counterintuitive finding may be that the absolute number of brands in a category is a reflection of a narrowly segmented market in terms of consumer preferences (Narasimhan, Neslin, and Sen 1996). Fourth, we find that CIs after a brand delisting are higher for service-oriented stores than for price-oriented stores, but SSIs do not differ between store types.

## MANAGERIAL IMPLICATIONS

Retailers have several motivations for brand delistings. Our main conclusion is that retailers should be careful when delisting brands, because it may result in significant sales losses among buyers of the delisted brands. Note, that a small loss in category sales may be mitigated by the cost savings and lead to an improved operating profit. Furthermore, retailers can decide to reduce their assortment and lower the average price level in the category at the same time, which may even lead to growing category sales and an improved assortment perception among the total group of buyers. In some situations, retailers may think that they offer too much choice within a category, particularly if former extensions in assortment size did not result in category sales increases. In such situations, assortment reduction may decrease the level of overproliferation in the category, though even in this scenario, retailers must recognize that most brand delistings will result in some dissatisfied customers. Therefore, retailers should develop communication methods that lower the negative effects of a brand delisting. For example, market leader Albert Heijn in the Netherlands decided to delist the brand Kanis & Gunnik. Using information from its loyalty card program, the store identified approximately 15,000 heavy users of the brand and sent these users a letter in which it explained the delisting reasons. The letter also contained a coupon offer for an alternative brand.

We believe that there are two major implications of our findings for retailers. First, two major variables are very important in the context of brand delistings: brand equity and hedonic level. Retailers should be especially careful when they delist high-equity brands in hedonic categories. When high-equity brands are delisted, a larger group of consumers indicates that they will switch to another store. Moreover, additional analysis suggests that brand equity is strongly correlated with market share. Because high-equity brands often have high market shares, delisting a high-equity brand will affect more consumers.

Second, our results show that a large assortment size may mitigate the negative effects of delistings, which means there are better opportunities for delistings in large assortments. However, many retailers,

especially price-oriented stores, have reduced their assortment sizes dramatically. If smaller assortments lead to stronger negative delisting effects, at some point past the minimum required assortment size, further reductions will no longer be feasible.

Although this study focuses on the retailers' perspective, the results may be useful for brand manufacturers as well. By consistently building brand equity, manufacturers can strengthen their brand to such a level that retailers would have difficulty delisting it. Thus, brand equity increases not only the price premium that consumers are willing to pay but also manufacturer power when negotiating buying conditions with retailers. Furthermore, as store loyalty in general is stronger than brand loyalty, manufacturers should develop strategies to connect the customer to their brands. For instance, Unilever developed its own consumer magazine Yata Yata that is distributed directly to households. With this magazine Unilever aims to improve the link between the consumer and the Unilever brands.

## **LIMITATIONS AND FURTHER RESEARCH**

A major limitation of our research is that the results in both studies are based on hypothetical situations. A possible drawback of this research design is that people do not always act the way they claim they would or have difficulty imagining what action they would take. This limitation may lower the external validity of the reported brand delisting responses. Therefore, we suggest that additional research should test the effects of actual brand delistings, though retailers may not be willing to cooperate with research in which several high-equity brands are delisted across several product groups. Another limitation of our study is that we measure the effect of a brand delisting among buyers of the delisted brand and therefore cannot comment on how nonbuyers of the delisted brand may react. The AE of nonbuyers of a delisted brand may even be more favorable after the delisting because fewer brands in the category might lower their search



costs. Further research therefore should test the effect of a brand delisting on the assortment perceptions of nonbuyers.

Additional research also could focus on the long-term effects of brand delistings, because the majority of assortment reduction studies have considered only short-term effects. Brand delistings also are not executed in isolation. For example, a brand delisting may be accompanied by an increase in the service level of the store or the addition of new categories (e.g., bakery, coffee stand, more fresh food), which might eliminate some of the negative consequences of brand delistings. Moreover, consumers may be confronted with multiple brand delistings in a single and/or multiple categories, so further research should study this issue.

**Table 1.**

Descriptive Statistics of the Controlled Experiment (n = 383)

		Assortment Evaluation (1–7)		Store Switching Intention (1–5)		
		Average	Standard Deviation	Average	Standard Deviation	n
Equity of delisted brand						
-	Low	4.38	1.23	2.94	1.37	160
-	High	3.86	1.42	3.45	1.32	223
Assortment size						
-	Small (6 brands)	3.92	1.38	3.41	1.33	196
-	Large (9 brands)	4.24	1.34	3.18	1.42	187
Assortment structure						
-	One-third high equity	3.85	1.45	3.46	1.35	192
-	Two-thirds high equity	4.30	1.24	3.14	1.38	191

**Table 2.**

ANOVA Results

	Assortment		Store Switching		Store Switching	
	Evaluation		Intention		Intention	
Variable	F-value	p-value	F-value	p-value	F-value	p-value
Brand equity (BE)	15.08	.000	20.203	.000	8.423	.002
Assortment size (AS)	5.835	.008	3.027	.042	.471	.245
Assortment structure (STR)	10.755	.005	4.683	.016	.767	.191
BE × STR	1.295	.128	2.074	.076	1.274	.130
AS × STR	2.622	.054	4.186	.021	2.000	.079
Assortment evaluation					139.86	.000
Notes: <i>p</i> -values are one sided. Significant relations ( $p < .05$ ) are bolded.						

Table 3.

Hedonic Level as Judged by Managers of Selected Product Categories (n = 40)

Product Category	Cronbach's Alpha (three-item scale)	Average Hedonic Level (1–7)	Standard Deviation
Margarine	.83	3.40	1.21
Rice	.84	3.86	1.21
Detergent	.80	3.90	1.45
Toilet paper	.86	3.92	1.54
Frozen vegetables	.74	4.05	1.06
Sauces	.83	4.54	1.22
Cola	.82	5.03	1.22
Coffee	.54	5.38	0.81
Beer	.73	5.55	0.97
Cigarettes	.88	5.78	0.94

**Table 4.**

Average, Standard Deviation (s.d.), and Correlation Coefficients for Variables in Study 2 (n = 1213)

	Average	s.d.	SSI	CI	BE	BT	PT	CL	AS	STR	NB	ST	NAS	PB	SEX	AGE
SSI	1.29	0.85	1.00													
CI	2.79	1.38	.16	1.00												
BE	5.28	1.05	.16	.15	1.00											
BT	0.17	0.37	-.08	-.06	-.60	1.00										
PT	4.58	0.79	.15	.16	-.12	-.12	1.00									
CL	0.23	0.14	.15	.16	-.04	-.04	.19	1.00								
AS	1.00	0.11	-.02	.03	.05	.05	.00	-.02	1.00							
STR	0.56	0.17	-.06	-.05	-.11	-.11	-.24	.04	.01	1.00						
NB	7.04	1.97	-.02	.04	-.19	-.19	.07	-.38	.32	.19	1.00					
ST	0.50	0.50	.01	.10	.04	.04	.03	.01	.29	-.05	.13	1.00				
NAS	3.11	1.44	-.01	-.02	-.02	-.02	-.02	-.01	-.12	.00	-.05	-.12	1.00			
PB	0.12	0.33	-.04	-.06	.01	.01	-.11	-.05	-.01	-.02	-.03	.05	.02	1.00		
SEX	0.77	0.42	-.10	.01	.04	.04	-.13	-.00	.02	.05	-.02	.01	.06	.03	1.00	
AGE	2.55	0.85	-.01	.06	.04	.04	-.09	-.02	.02	-.08	.03	.13	.02	.00	.04	1.00

Notes: The abbreviations and measurements of the dependent and independent variables appear in the Appendix. Significant relations ( $p < .05$ ) are bolded.

**Table 5.**

Averages and Percentages of Store Switch Intentions and Complaining Intentions Per Antecedent (n = 1213)

Antecedent	Store Switch Intentions*		Complaining Intentions**	
Brand equity	1.17	1.41	2.62	2.96
(low versus high)	(8%)	(17%)	(41%)	(52%)
Brand type	1.32	1.13	2.83	2.60
(manufacturer versus store brand)	(14%)	(6%)	(47%)	(41%)
Product type	1.14	1.46	2.53	3.11
(low versus high hedonic level)	(7%)	(20%)	(38%)	(57%)
Concentration level	1.21	1.39	2.63	2.99
(low versus high)	(9%)	(17%)	(49%)	(53%)
Assortment size	1.31	1.25	2.82	2.74
(low versus high)	(14%)	(11%)	(48%)	(45%)
Proportion of high-equity brands	1.30	1.23	2.78	2.80
(low versus high)	(14%)	(9%)	(46%)	(48%)
Number of brands	1.32	1.24	2.76	2.81
(low versus high)	(14%)	(11%)	(44%)	(49%)
Store type	1.28	1.29	2.65	2.93
(price- versus service-oriented)	(13%)	(12%)	(42%)	(51%)
Number of alternative stores	1.30	1.26	2.78	2.79
(low versus high)	(14%)	(11%)	(45%)	(48%)
Total	1.28		2.78	
	(13%)		(46%)	

Note: Significant relations ( $p < .05$ ) are bolded.

**Table 6.**Estimation Results: Ordered Probit and Ordinary Least Squares Analyses, Study 2 (n = 1213)<sup>1,2</sup>

	Hypothesis	Store Switching Intentions <sup>3</sup>	Complaining Intentions
Constant <sup>4</sup>		3.05 (.00) 3.14 (.00) 3.60 (.00) 3.84 (.00)	-.21 (.76)
<b>Brand-Related</b>			
Brand equity (BE)	6 <sub>a,b</sub>	.13 (.02)	.15 (.00)
Brand type (BT) (1=store brand; 0=manufacturer brand)		-.12 (.27)	.13 (.16)
<b>Product Category–Related</b>			
Product type (PT)	7 <sub>a,b</sub>	.18 (.00)	.17 (.00)
Concentration level (CL)	8 <sub>a,b</sub>	1.84 (.00)	1.49 (.00)
Number of brands (NB)		.07 (.03)	.07 (.00)
<b>Retail Assortment–Related</b>			
Assortment size (AS)	9 <sub>a,b</sub>	-.81 (.08)	-.38 (.17)
Assortment structure (STR)	10 <sub>a,b</sub>	-.68 (.01)	-.35 (.08)
<b>Store-Related</b>			
Store type (ST) (1=service-oriented; 0=price-oriented)	11 <sub>a,b</sub>	-.33 (.12)	.36 (.02)
Number of alternative stores (NAS)	12	.03 (.39)	.18 (.01)
<b>Control Variables</b>			
Promotional buy (PB) (1 = yes; 0 = no)		-.12 (.45)	-.19 (.09)
Gender (SEX) (1=female; 0=male)		-.19 (.07)	.09 (.35)
Age (AGE)		.03 (.67)	.08 (.09)
<b>General Statistics</b>			
LR statistic /F-value ( <i>p</i> -value)		108.75 (.00)	5.48 (.00)
(McKelvey and Zavoina) R <sup>2</sup>		.203	.107

<sup>1</sup>We estimated several other model specifications (i.e., OLS instead of ordered probit) and systems of equations to account for correlations between errors. The estimated coefficients and accompanied *p*-values do not change significantly when we use these models.

<sup>2</sup>We included dummy variables for each store to adjust for non-measured variance on the store level. For explaining SSI one of the store dummy variables is significant at *p* < .05, for explaining CI two store dummy variables are significant at *p* < .05.

<sup>3</sup>We report one-sided *p*-values for our hypothesized relationships and two-sided *p*-values for the constant and non-hypothesized variables.

<sup>4</sup>In an ordered probit model, there is no single constant. Instead, we estimate four limit points (5–1).

Figure 1.

Graphical Display of Assortment





Figure 2.

Interaction Effect of Brand Equity × Assortment Structure

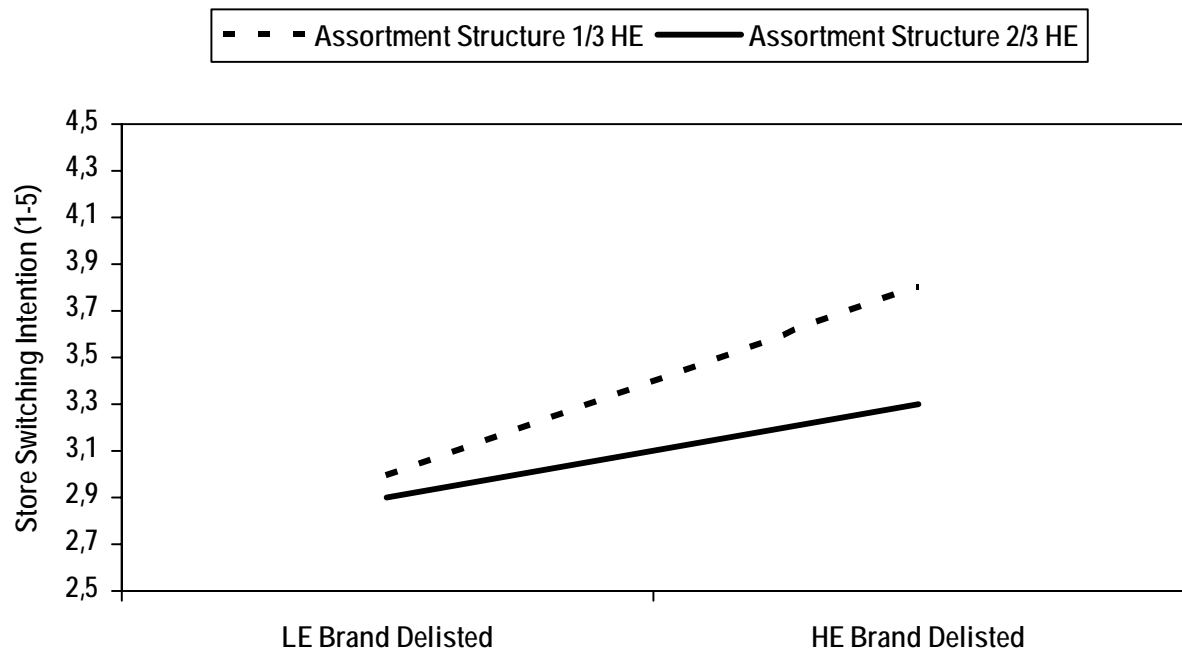
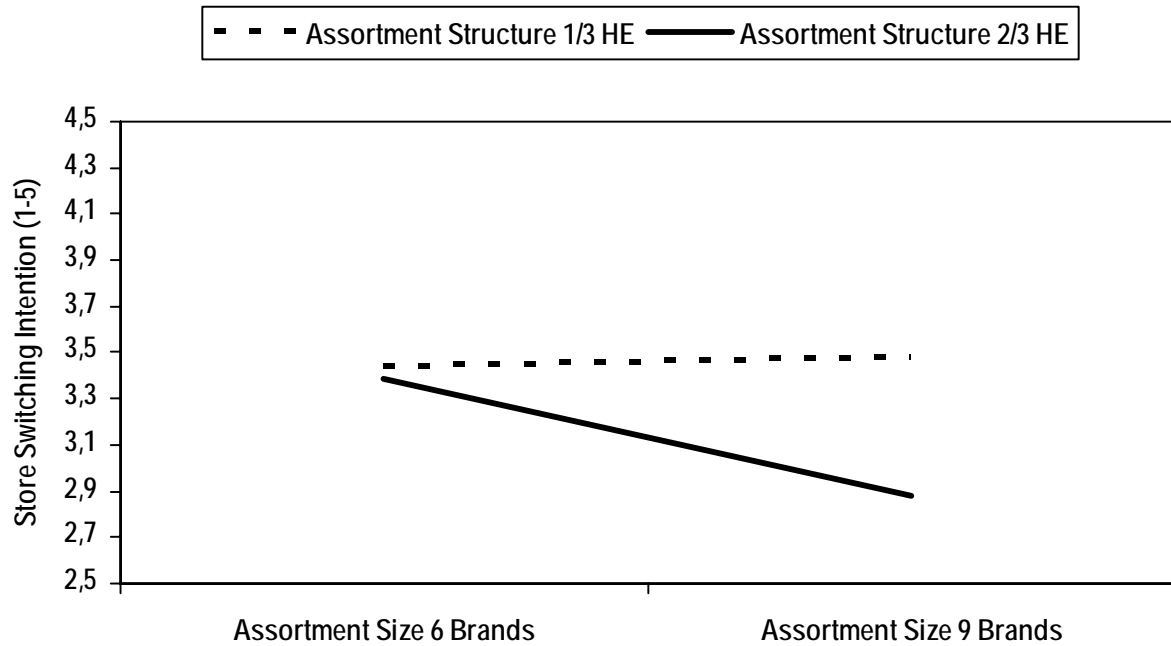
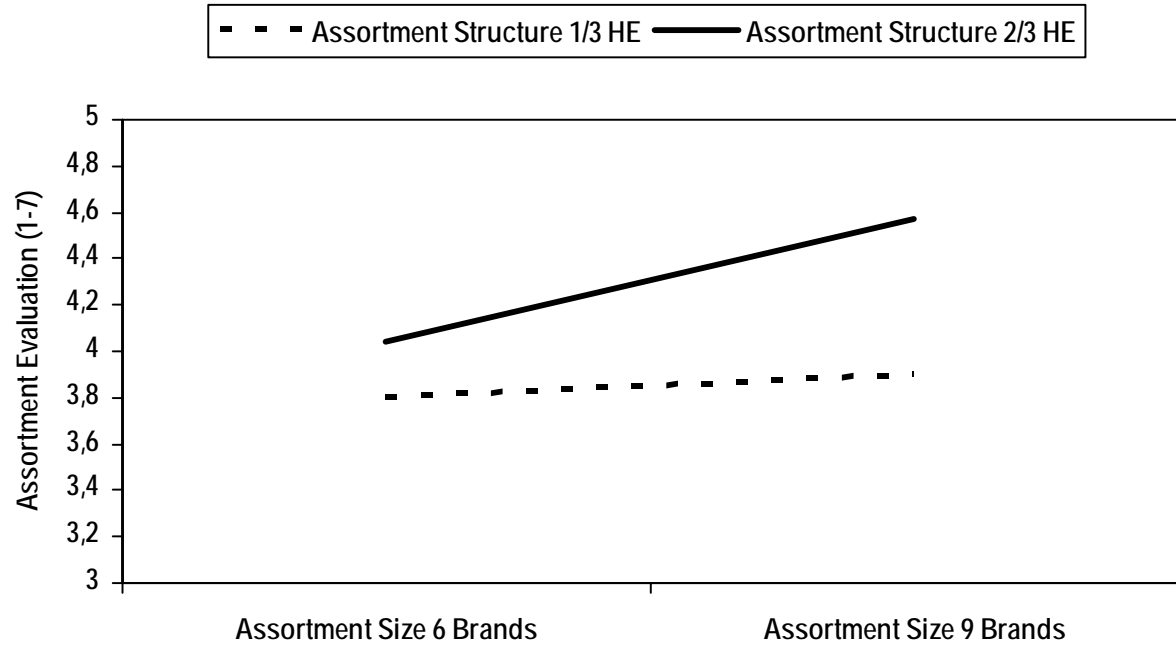


Figure 3.

Interaction Effect of Assortment Structure  $\times$  Assortment Size



## Appendix

### Overview and Definition of Variables, Study 2

Variable	Concept	Measurement Instrument
<b>Dependent Variables</b>		
Store switching intention (SSI)	Store visit frequency	Degree of expected store visits in post-delisting period on five-point scale (1 = same store visit frequency as before, 5 = stop buying at this store at all).
Complaining intention (CI)	Complaining actions	Three-item formative scale (1–7) consisting of three distinct types of complaining behavior.
<b>Independent Variables</b>		
<i>Brand-related</i>		
Brand equity (BE)	Brand strength	Degree of brand equity based on a three-item scale consisting of perceived price, perceived quality, and perceived consumer preference (1=low, 7 =high). Brands evaluated by a group of 40 food industry managers.
Brand type (BT)	Manufacturer or retailer brand	Dummy variable, equal to 1 if the brand is a retailer brand.
<i>Product category-related</i>		
Product type (PT)	Hedonic level of product	Three-item scale consisting of attractive, nice, and enjoyment (1 = low, 7 = high). Product categories evaluated by a group of 40 food industry managers.
Concentration level (CL)	Brand concentration	Squared market share of top four brands (Hirschman-Herfindahl index).
Number of brands (NB)	Number of brands	Number of brands offered in product category of retailer X. Source: counts of number of brands in product category during store visits.
<i>Retail assortment-related</i>		
Assortment size (AS)	Relative number of brands	Relative number of brands offered in a product category compared with the average number of brands offered in the product group by all participating retailers. Source: counts of number of brands in product category during store visits.
Assortment structure (STR)	Proportion of high-equity brands	Proportion of high-equity brands among brands with a 2% or higher market share for each participating retailer.
<i>Store-related</i>		
Store type (ST)	Service or price oriented store	Dummy variable, equal to 1 if the retailer has high scores on perceived service elements as quality, friendliness of employees, assortment size, etc. Source: GfK Summer Report 2004.
Number of alternative stores (NAS)	Number of other stores available to consumers	Number of supermarkets in the same zip code area.
<b>Control Variables</b>		
Promotional buy (PB)	Brand is bought on promotional	Dummy variable, equal to 1 if the purchased brand was on promotion at the moment of purchase.
Gender (SEX)	Gender of respondent	Dummy variable, equal to 1 if respondent is female.
Age (AGE)	Age of respondent	Four-point scale (1 = 30 years or younger, 4 = 65 years or older).

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